KGI HENRY E. RIGGS SCHOOL OF APPLIED LIFE SCIENCES

Class of 2026 Graduation Requirements

Master of Science in Human Genetics and Genomic Data Analytics (MSGDA)

Students in the MSGDA program are required to take a minimum of **63.5 units** over the course of two years of study. The coursework is comprised of required courses, elective courses, and a capstone project.

Students must also complete a 400-hour internship.

Program Requirements:

Fall 1 Courses	Credits
GENE 5120 Bioinformatics in Python	1.5
GENE 5190 MSGDA Journal Club	0.0
GENE 5200 Human Molecular Genetics	3.0
GENE 5240 Genetic Disease Mechanisms	1.5
BUS 5000 Introduction to Bioscience Industries	3.0
MATH 5020 Clinical Biostatistics	3.0
MATH 5100 Data Analytics in Python	1.5
Subtotal	**13.5**

Spring 1 Courses	Credits
GENE 5130 Bioinformatics in R	1.5
GENE 5150 Human Genomics NGS Lab	2.0
GENE 5191 MSGDA Journal Club	0.0
GENE 5250 Human Genomics	3.0
GENE 5260 Clinical Cancer Genomics	3.0
GENE 5270 Medical Genetics	3.0
MATH 5220 Data Analytics in R	1.5
GENE 5280 Biochemical Genetics	1.5
REG 6520 Clinical Trial Design and Literature Evaluation	3.0
Subtotal	**18.5**

Fall 2 Courses	Credits
GENE 6130 DNA Sequencing and Variant Analysis	3.0
GENE 6140 Functional Genomics	3.0
GENE 6190 MSGDA Journal Club	0.0
GENE 6900 MSGDA Capstone Project I	6.0
Subtotal	**12.0**

Spring 2 Courses	Credits
GENE 5290 Pharmacogenomics	1.5
GENE 6135 Genomic Knowledge Translation	1.5
GENE 6145 Genomic Data Visualization and Management	3.0
GENE 6191 MSGDA Journal Club	0.0
GENE 6901 MSGDA Capstone Project II	6.0
Subtotal	**12.0**

Students are required to take 1.5 credit hours of ethics, either **PDEV 5230 Healthcare Ethics** (Fall) or **PDEV 5240 Life Science Industry Ethics** (Spring).

In addition to the above required courses, students will select 6 units of electives to satisfy their concentration requirement. *Please note that not all elective courses are offered every year.* Students are required to declare their concentration by May 15 of their first year and will begin taking electives in their 2nd year.

Up to 3 units may be counted from courses taken at CGU with permission of the program director.

Clinical Decision Support	Credits
GENE 5020 Human Embryology and Prenatal Diagnosis	3.0
GENE 6447 Microbiomics and Pathogen Genomics	1.5
GENE 6446 Genetic Engineering	1.5
SCI 5100 Molecular Basis of Disease	1.5
SCI 5240 Medical Terminology	3.0
SCI 6410 Fundamental Papers in Applied Medicine	1.5
MATH 5300 Machine Learning in the Life Sciences	1.5

Clinical Trial Design	Credits
GENE 6446 Genetic Engineering	1.5
REG 5000 Introduction to US Food and Drug Law	1.5
REG 6510 Design of Clinical Trials	1.5
MATH 5300 Machine Learning in the Life Sciences	1.5
SCI 5300 Pharmaceutical Discovery	1.5
SCI 5310 Pharmaceutical Development	1.5
SCI 6310 Biotechnology-based Therapeutics	3.0
SCI 6710 Technologies for Biomarker and Drug Discovery	1.5

Assay Development	Credits
GENE 6446 Genetic Engineering	1.5
GENE 6447 Microbiomics and Pathogen Genomics	1.5
BUS 6600 Business Operations	3.0
MATH 5300 Machine Learning in the Life Sciences	1.5
REG 5000 Introduction to US Food and Drug Law	1.5
SCI 5000 Molecular Biotechnology	1.5
SCI 5240 Medical Terminology	3.0
SCI 5700 Medical Diagnostics	3.0
SCI 6401 Fundamental Papers in Molecular Biology and Biotechnology	1.5
SCI 6410 Fundamental Papers in Applied Medicine	1.5
SCI 6710 Technologies for Biomarker and Drug Discovery	1.5